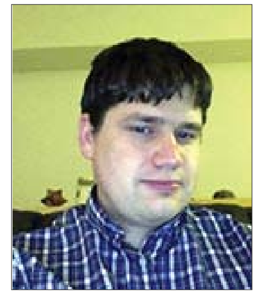
A Mono-Theism Theorem: Gödelian Consistency in the Hierarchy of Inference

Winston Ewert and Robert J. Marks II



Winston Ewert

Robert J. Marks II

Logic is foundational in the assessment of philosophy and the validation of theology. In 1931 Kurt Gödel derailed Russell and Whitehead's Principia Mathematica *by showing logically that any set of consistent axioms will eventually yield unknowable propositions. Gödel did so by showing that, otherwise, the formal system would be inconsistent. Turing, in the first celebrated application of Gödelian ideas, demonstrated the impossibility of writing a computer program capable of examining another arbitrary program and announcing whether or not that program would halt or run forever. He did so by showing that the existence of a halting program can lead to self-refuting propositions. We propose that, through application of Gödelian reasoning, there can be, at most, one being in the universe omniscient over all other beings. This Supreme Being must by necessity exist or have existed outside of time and space. The conclusion results simply from the requirement of a logical consistency of one being having the ability to answer questions about another. The existence of any question that generates a self-refuting response is assumed to invalidate the ability of a being to be all-knowing about the being who was the subject of the question.*

Can the necessity of, at most, a single Supreme Being be deduced from logic applied to the definition of universal omniscience? Based on Gödelian reasoning and a need for logical consistency, we make a case that it can.

Alfred North Whitehead and Bertrand Russell's three-volume tome, *Principia Mathematica*,[1] has been called "the most influential book never read."[2] Whitehead and Russell's quest was to describe a set of axioms and inference rules in symbolic logic from which all mathematical truth could be proven.[3] Their quest was shown to be futile by a beautiful theory crafted by Kurt Gödel. Gödel used a self-referencing proposition to show that whatever system resulted from Whitehead and Russell's theory would either be incomplete, in the sense that there would remain unanswerable truths, or be inconsistent, such as showing that $1+1=2$ and $1+1=3$.

Here is a simplified explanation. Gödel's incompleteness theorem says that at some point Whitehead and Russell would encounter a proposition something akin to

Theorem X: Theorem X cannot be proved.

If Theorem X can be proved, then the mathematical system is inconsistent. You have proven something that you have claimed cannot be proven. If you cannot prove Theorem X, then your system is incomplete. There are propositions you cannot prove. An assumption of consistency therefore dictates incompleteness, and the conclusion is that there are truths that cannot be proven.[4]

Winston Ewert *recently graduated with a doctorate from Baylor University and works as a software engineer in the Seattle, Washington, area.*

Robert J. Marks II, *Ph.D., is a distinguished professor of electrical and computer engineering in the School of Engineering and Computer Science, Baylor University, Waco, Texas.*

Strange Loops

Theorem X is an example of a self-refuting statement, the most famous of which is the paradox spoken by the Cretan Epimenides.[5] We paraphrase:

"Everything I say is a lie."

If true, then Epimenides has just told a lie; in which case, he is telling the truth. But if he is telling the truth, he just lied. Self-reference has created an unresolvable contradiction.

Hofstadter refers to such recursive flip-flops in logic as "strange loops" and notes their occurrence in drawings and music.[6] The art of M.C. Escher shows ever-ascending staircases that seem to magically loop to the bottom of the stairs with no appearance of descending. In music, the downward Shepard-Risset glissando seems to ever decrease in pitch while, in reality, the music is a repetitive strange loop akin to Escher's looping stairs.[7] Likewise, there are rhythms that seem ever to accelerate while, in reality, the beats per second remain the same.[8]

Strange loops do not exist in reality. Ascending stairs that repeatedly loop back to the base of the stairs are not possible. Escher's art is an optical illusion. A musical pitch that decreases forever also does not exist. The Shepard-Risset glissando is an audio illusion.

In mathematics, Penrose points out that Theorem X in context is not a strange loop.[9] If the originating foundational axioms are consistent, Theorem X is, rather, true: a truth that cannot be proven on the foundation of the axioms on which the theory is built. Gregory Chaitin, a father of algorithmic information theory, takes us even further. There are things that are true, like Theorem X, which can be proved not to be provable. Chaitin says that most truths cannot be proven from foundational axioms. Most things, rather, are true simply because they are true.[10]

More on Cretans or Moron Cretans?

What of Cretans who only tell lies? Can they exist? Here is the reality. If a man walks into my office and proclaims, "Everything I say is a lie!" I would not spend time logically analyzing him. If I were not a psychiatrist interested in curing his mental disease, I would feel that this wacko was wasting my time.

The Apostle Paul confirms the dishonesty of Cretans when he refers to Epimenides and writes,

"One of themselves, a prophet of their own, said, 'Cretans are always liars …' This testimony is true" (Titus 1:12–13a, edited).

There are no strange loops here.

1. Since Paul is not a Cretan, there is no self-reference and therefore no ambiguity nor contradiction in his statement.

2. Saying "Cretans are always liars" is not the same as saying "Everything a Cretan says is a lie." Paul is simply saying that Cretans are not to be trusted. Sometimes they lie and sometimes they do not. Curiously, a strange loop only occurs if a Cretan says something like "Everything I say is a lie," and you trust him!

Strange Loops in Reality

The bottom line is this: Requiring the universe to be logically consistent requires the avoidance of all universal strange loops.

Contradictions arising from self-reference at first can appear to be nothing more than recreational word play. But the contradictions can be, in fact, deadly serious. Alan Turing, the father of computer science, used Gödelian self-reference to prove the *halting problem*: It is not possible to write a computer program that can examine any arbitrary computer program to see whether the program will eventually stop or run forever.[11] Turing proved the halting problem by assuming that a halting program existed and by submitting the augmented halting program for analysis to another copy of the halting program. In Turing's analysis, the halting program is therefore examining a version of itself. The unresolvable contradictions arising from such an exercise reveal that halting programs cannot be written. Today the halting problem is part of most undergraduate computer science curricula.

Halting programs do not exist in reality because they invoke a strange loop, and strange loops do not exist in reality. Omniscience, though, is not constrained by strange loops within a closed system. Certainly an omniscient God can tell us whether or not any computer program will halt. A computer cannot.

Gödelian Omniscience

We are now ready to begin development of our main result: Gödelian reasoning applied to omniscience implies that there can be but one being who is omniscient over all others. By necessity, this being must exist or have existed external to time and space. The basics of the idea are from an intriguing paper by Wolpert.[12]

Unanswerable Questions

Prophets of the Old Testament were infallible. They conversed with God and were able to accurately forecast events. If a prophet was shown to give false prophesy, the prophet was executed by stoning. To reach retirement, career prophets could therefore make no falsifiable prophesies. Close to the idea of a prophet is an *oracle*. Like prophets, oracles can predict the future. Prophets basically work for free. Oracles, on the other hand, are typically thought of as sources of truth that require payment. Ask an oracle a question, slip him a twenty dollar bill, and you get an answer. More generally, an oracle is a device or entity that performs observation, prediction, or recollection. A more formal name for the oracle is a *physical inference device*.[13]

Oracles are all-knowing (omniscient) in certain areas of knowledge. By omniscient, we mean that the oracle is able to answer any question accurately. In principle, we could consider an oracle which knows the answer, but is unable to communicate it. However, we do not consider that to be true full omniscience. We use the terms *inference device* and *oracle* (subsequently, the term *node*) interchangeably. Individuals (or beings) involved with prophecy will be called *agents*. An agent may or may not be an oracle. The God of the Bible is certainly greater than a prophet or an oracle. But we can agree that anything done by an oracle or a prophet can be done by God.

Let's introduce the idea of a *binary oracle*. You can ask the binary oracle any "yes" or "no" question, and the oracle will respond with either a "yes" or a "no" answer. Attention is restricted to oracles that make prophecies about another agent. Questions proposed to an oracle are restricted. We will exclude *subjective questions* such as "Will Agent 89 be more beautiful than Agent 86 tomorrow?" Answers that are a matter of opinion rather than fact have no place in being laid at the feet of an oracle. There are also many *stupid questions* such as "Will Agent 23 ever weigh more than love?" or "Is Agent 007 leafy?" Stupid questions are usually based on faulty presuppositions. Love does not have mass, and people are not "leafy."

Gödel based his transformative theory on strange loops emerging from self-reference. So let's ask a binary oracle named Bob a simple statement about himself:

> Question 1 to Bob: *Will you respond "yes" to this question?*

There are only two answers Bob can give: "yes" and "no." If Bob says "yes," his single response serves two purposes. First, "yes" is Bob's next response. Second, it is an answer to Question 1. Since both are "yes," Question 1 has been answered clearly and without ambiguity. A response of "no" is also a good answer.

Here is another question for Bob that is even more curious.

> Question 2 to Bob: *Will you respond "no" to this question?*

Note that Question 2 is neither subjective nor stupid. Let's look at the two responses Bob can give and the logical consequences of each. If Bob says "yes," his next response is "yes" even though he is also saying his next response will be "no." We have an unresolvable contradiction. We also get a contradiction when Bob says "no." His response is "no" even though he said it would not be. We have a strange loop.

What are we to make of Question 2? Since the question is neither stupid nor subjective, we need to create a new category. Let's call such questions *unanswerable*. Unanswerable questions expose a limitation of the binary oracle. Bob has limited power. There are some questions he is unable to answer while maintaining consistency. Note that while Bob cannot answer the question, at least in principle another agent could. Using another agent removes self-reference.

There are statements about God that look as if they land in the category of unanswerable. Consider the statement:

> "With God all things are possible" (Matthew 19:36b).

If true, then it is possible for God to create something impossible for God to do! Have we discovered a limitation to God through this strange loop?

No, there is no inconsistency. There is, rather, incomplete context in the statement. Scripture reveals that God cannot do, or more properly chooses not to do, actions that are contrary to his nature. God is just and righteous. He therefore cannot do anything against his nature of justness or righteousness. To include this context, we might rewrite the statement as "With God all things are possible that are consistent with his nature." In this case, an unanswerable question can be made resolvable by the introduction of additional context.

Restricting his actions to his chosen nature allows God to be logically consistent. He is immune from the logical quagmire of statements that appear on the surface to be self-refuting. But are we then to conclude that these restrictions impose limitations on God? To the extent that God cannot be contrary to his nature, the answer is an obvious yes. God has self-imposed limitations. Perfection is limited to be perfect. More on this later.

Let's return to our talk about binary oracles. We see that with a single binary oracle, there are self-referential unanswerable questions that invoke contradictory strange loops. Does this extend to two binary oracles each making a prediction about the other? As you might expect, things get a bit more complex to analyze.

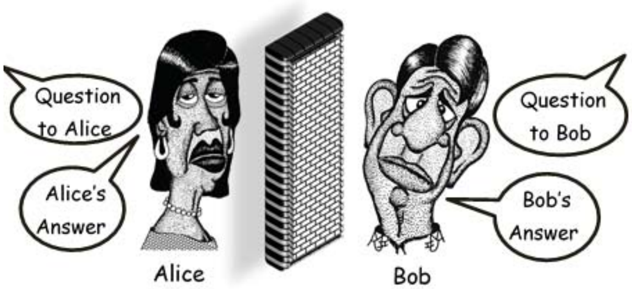


Figure 1

Suppose we have the two binary oracles shown in Figure 1: a male binary oracle named Bob and a female binary oracle named Alice. In isolation relative to each other, each answers "yes" and "no" questions posed to them. Because of the possible strange loops associated with self-referential questions, we will not allow Alice to ask a question about herself nor Bob a question about himself. But Bob can be asked a question about Alice and Alice a question about Bob.

Here is the first pair of questions asked simultaneously:

Pair #1.

- Question to Alice: *Is Bob's next response "yes"?*
- Question to Bob: *Is Alice's next response "yes"?*

There are two ways Bob and Alice can respond correctly. Truth and consistency prevail if both Bob and Alice answer "yes." This is in fact the most obvious answer. Another correct response is for both Bob and Alice to say "no." So the possible answers are:

- o Both Bob and Alice say "yes," or
- o Both Bob and Alice say "no."

Let's try a second pair of questions.

Pair #2.

- Question to Alice: *Is Bob's next response "no"?*
- Question to Bob: *Is Alice's next response "no"?*

Let's think this out. Suppose that Alice answers "yes" and Bob answers "no." Does this work? Alice is saying, "Yes, Bob's next answer is 'no,'" which is correct. And Bob is saying, "No, Alice's next response *will not* be 'no,'" which is also correct. So, Alice responding "yes" and Bob "no" give a valid and consistent response. If we switch Alice to "no" and Bob to "yes," it also works. So the possible valid responses to Pair #2 are

- o Alice says "yes" and Bob says "no," or
- o Alice says "no" and Bob says "yes."

Here is an even more curious pair of questions to Bob and Alice that results in a strange loop.

Pair #3.

- Question to Alice: *Is Bob's next response "no"?*
- Question to Bob: *Is Alice's next response "yes"?*

Although probably not initially apparent, these two questions are unanswerable, just as when Bob was asked "Will you respond 'no' to this question?" This is tricky for two agents, so let's walk through the self-contradictory logic:

- ✓ If Alice answers "yes," she is saying that Bob will predict that she will say "no," which is contradictory.
- ✓ If Alice answers "no," she is saying that Bob will reply "yes," thus predicting that Alice will respond "yes"—but she did not, thus producing another contradiction.

So whatever Alice says, she will be wrong. The two questions posed are therefore unanswerable.

The exchange of two binary oracles is akin to the single oracle being asked to predict the opposite of what his next response will be. So like the single oracle, there is a limitation on what a pair of binary oracles can predict about each other. Omniscience cannot make allowance for the possibility of unanswerable questions.

One way to resolve this limitation is to use arrows pointing only one way. This is illustrated in Figure 2 with the introduction of a third agent named Edgar. Alice can make predictions about Bob and Edgar. And Bob can make predictions about Edgar. But that is it. If an arrow pointed from either Bob or Edgar to Alice, we would introduce the possibility of unanswerable questions. An additional arrow from Edgar to Bob also would allow the asking of unanswerable questions. These strange loops are *feedback loops*. In our oracle analysis, feedback loops are strange loops. To avoid unanswerable questions, feedback loops among oracles must be avoided.

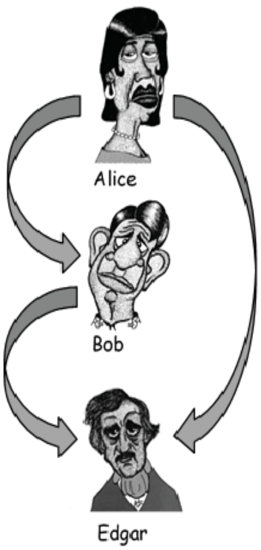


Figure 2

Feedback loops are not allowed at any level—not even for one oracle. Remember "Question 2 to Bob: Will you respond 'no' to this question?" The question can be viewed as a reference of Bob to himself—a kind of auto feedback loop as is shown in Figure 3. A two-oracle loop example is one arrow pointing from Bob to Alice and another arrow pointing from Alice to Bob. Feedback loops in both cases can lead to the asking of unanswerable inference questions. And Hofstadter is right. These loops are indeed strange.

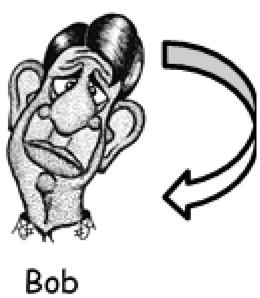


Figure 3

A feedback loop can be indirect as illustrated in Figure 4. It looks like Figure 2 except that the arrow connecting Edgar to Alice has been reversed and we have feedback. Each of the three agents can make predictions only about the agents to which their arrow points.

With this configuration, there are valid cross referential inferences that can be made. An obvious example is the following.

Triple-header questions #1.

- Question to Alice: *Is Bob's next response "yes"?*
- Question to Bob: *Is Edgar's next response "yes"?*
- Question to Edgar: *Is Alice's next response "yes"?*

All three binary oracles answer "yes," and everybody's happy. Our goal, however, is to avoid any possibility of asking unanswerable questions. So here is a series of questions that is unanswerable even though the feedback loop in the logic is indirect.

Triple-header questions #2.

- Question to Alice: *Is Bob's next response "yes"?*
- Question to Bob: *Is Edgar's next response "yes"?*
- Question to Edgar: *Is Alice's next response "no"?*

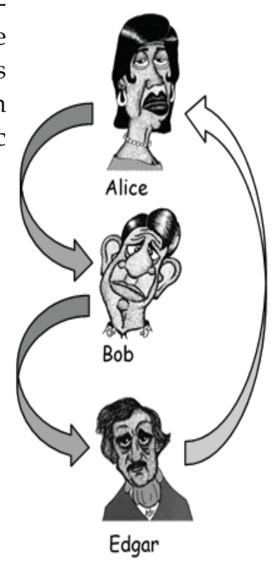


Figure 4

Let's unpack this. There are a lot of mental gymnastics needed to analyze this simple problem, so understanding will take some head scratching. The conclusion is that Alice can neither answer "yes" nor "no" without subsequent contradiction.

1. Alice answers "yes."

- If Alice answers "yes" to the question asked her, she is saying that Bob will say "yes" (and Bob *must* then say "yes," according to the rules).
- If Bob says "yes" in answer to the question asked him, in effect he is stating that "Yes, Edgar's next response will be 'yes.'"
- Edgar must say "yes" in answer to the question asked him, thereby affirming that "Alice's next response will be 'no.'"
- But Alice's response had been "yes"—and this is a contradiction.

2. Alice answers "no." (The double negatives make this next analysis even harder.)
   - If Alice answers "no," she is saying that Bob's next response will "not be 'yes.'" Thus, Bob will answer "no" to the next question put to him.
   - Bob must say "no" in answer to the question asked him, in effect stating that "No, Edgar's next response will not be 'yes.'" Therefore Edgar must answer the next question put to him with "no."
   - Edgar must say "no" in answer to the question asked him, in effect stating that "No, Alice's next response will not be 'no.'" This means that Alice's next response will be "yes."
   - But Alice answered with "no"—a contradiction.

Triple-header questions #2 are therefore unanswerable.

Here is a shorthand version of the two possibilities we just discussed about the triple-header question.

1. A+ → B+ → E+ → Ao
2. Ao → Bo → Eo → A+

where A = Alice, B = Bob, E = Edgar, + = "yes," o = "no," and implication is denoted by the arrow "→". In both of these statements, the last entry is in direct opposition to the first.

A Consistent Inference Hierarchy and Spatial Omniscience

In general, unanswerable questions in an inference structure can be avoided if there are no feedback loops. Here is a way that this can be guaranteed. Assume that we have nine agents as shown in Figure 5. Instead of giving the agents human names, let's simply number them one to nine. *Any arrangement that connects an agent to one or more agents with only higher numbers is guaranteed to have no feedback loops*.[14] A connection geometry obeying this simple rule is said to be a *feedforward directed graph*.[15]

In Figure 5, for example, agent ❷ can infer things about agents ❺, ❻, and ❼. That is why the arrows pointing from agent ❷ point to the larger numbered agents ❺, ❻, and ❼. But agent ❽ is not allowed to infer anything about the lower numbered agent ❶ less we encounter undesirable feedback loops that can result in possibly unanswerable questions. (If ❽ connected ❶, for example, we would have feedback loops ❶❹❽❶ and ❶❺❽❶.)

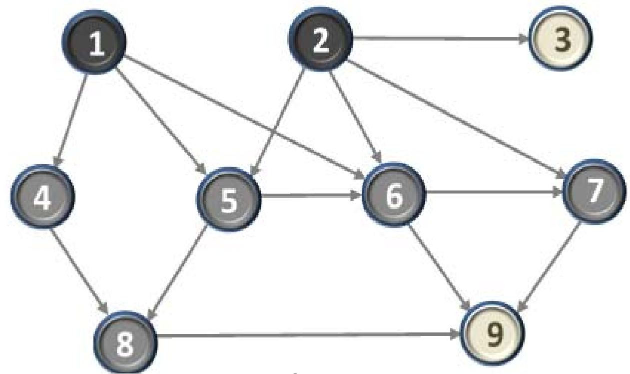


Figure 5

In graph theory, each agent in the group of nine is dubbed a *node*. We will henceforth interchangeably use the terms *node* and *agent*. There are three classes of nodes. We assume that each node has, at minimum, one arrow pointing to it or one arrow pointing from it.

1. *Source nodes*. These nodes only have arrows coming from them and no arrows pointing to them. In Figure 5, ❶ and ❷ are source nodes. The source nodes infer, but no one infers them.
2. *Sink nodes*. These are nodes that have only incoming arrows. There are no outgoing arrows. One or more oracles infer things about sink nodes, but sink nodes do no inferring themselves. Nodes ❸ and ❾ in Figure 5 are sink nodes. If you follow the flow of arrows in a graph and end up at a sink node, there is no escape. You have to stay there.
3. The third class consists of all nodes that are neither source nodes nor sink nodes.

In a graph that allows no unanswerable questions, an additional oracle can always be added that can make inferences about all the oracles directly. We will call the new oracle the *omniscient oracle*. It will have to be numbered lower than all of the other oracles, so we will assign it the number zero. Figure 6 shows the graph in Figure 5 addended by an omniscient oracle ⓿. The omniscient oracle can make inferences about all other oracles in the universe of agents and oracles without introducing any feedback loops and therefore any unanswerable questions.

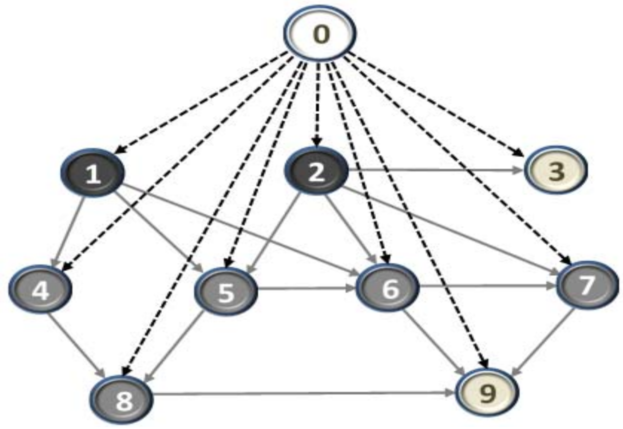


Figure 6

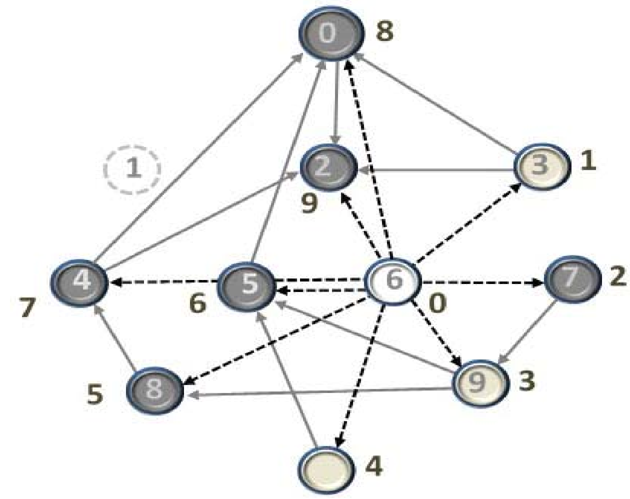


Figure 7

But *there can be only one universally omniscient oracle*. The universally omniscient oracle is always a source node and the only source node in the graph. An additional omniscient inference device can always be added. We can, for example, add a source node numbered −1 to the graph and draw arrows from it to all of the other nodes. The −1 node then replaces the ⓿ node as the omniscient inference device. Doing so robs ⓿ the status of a source node. The −1 node becomes the omniscient oracle and is now the sole source node in the graph.

We can construct an additional node to be omniscient over −1 and then one omniscient over that. This regress seems silly, however. The Bible indicates that, in the context of our analysis, there is a stopping point and there is an inference device superior to all other oracles who is the "Oracle above all other oracles." Such omniscience about Israel would be characteristic of the "LORD God of gods":

> "The LORD God of gods, he knoweth, …"
> (Joshua 22:22a).

Temporal Omniscience

Omniscience, as we have defined it, can be both spatial and temporal. Thus far, only spatial omniscience has been considered. The graphs of the numbered nodes with arrows, such as in Figure 5, depict a single snapshot in time. The physical inference devices that we dub oracles also exist in the flow of time. Oracles can die and can be born. There is nothing in our development that prohibits the inference graph from changing from time to time. A graph without loops need not even contain an omniscient inference device at some point in time.

The graph in Figure 6 can, a few minutes later, become the graph in Figure 7. Comparing the two, we see that agent ❶ has died and a new agent numbered **4** has been born. The positions of the remaining agents are the same, but the arrows have changed. Previously, the former node ❻ was not a very exciting node. Now it is the omniscient inference node! It has oversight of all other nodes. The node is still labeled ❻ in Figure 7, but we have written the number **0** beside the circle to show the node's new omniscient status. All of the other nodes also have new numbers written beside them. In the new graph, as before, an arrow emerging from a node can only point to a node with a higher number. This avoids feedback loops and therefore unanswerable questions.

The model of the omniscience thus far presented is a necessary, though not sufficient, model of the universal omniscience of the God of the Bible. In our exercise to describe the characteristics of a universal omniscient God, however, the possibility of temporal shifting of omniscience from one time to the next is troubling. The possibility of losing omniscience for intervals of time is also troubling. We can, though, further sharpen our model and address these concerns through an appeal to biblical references to creation and to the Big Bang as modeled by astrophysics.

Time, like space, is just another dimension. It differs only in the property that it can flow only one way. One can pace back and forth across the floor. One cannot travel back and forth in time. To continue the discussion about temporal omniscience, consider

Figure 8 where our old friend Bob the binary oracle flows through time. We have in the flow of time "Young Bob" in the past and "Old Bob" of the future. What can either infer about the other? The relationship does not seem symmetric. Old Bob, for example, knows what Young Bob said and did in the past. Because of time's unidirectional flow, the converse is not true. We will see, interestingly, the one-way flow of time does not make a difference in avoiding the feedback loops and the corresponding troubling unanswerable questions.

We begin by posing a pair of questions to Young Bob and Old Bob.

Pair #4.

- Question to Young Bob: *Will Old Bob's response be "no"?*
- Question to Old Bob: *Was Young Bob's response "yes"?*

No matter what Young Bob answers, Old Bob is stumped. As is usually the case in unwrapping the paradoxes of self-reference, the analysis at first seems like double talk. Closer inspection reveals that, indeed, Question Pair #4 is an unanswerable strange loop. Here we go.

- o If Young Bob replies, "Yes! I predict Old Bob will say No," then what can Old Bob say to answer the question?
  - ✓ If Old Bob says, "yes," then Young Bob was wrong.
  - ✓ If Old Bob says, "No. Young Bob's response was No (not Yes)," then he is telling an untruth about what Young Bob said.
- o If Young Bob replies, "No! I predict Old Bob will *not* say No (i.e., Old Bob will say Yes)," can Old Bob accurately respond?
  - ✓ If Old Bob says "yes," then he is saying "Young Bob's response was Yes." But Young Bob's response was "no."
  - ✓ If Old Bob says "no," then Young Bob was wrong. Young Bob said that Old Bob would say "yes," but he said "no."

Question Pair #4 is thus unanswerable. Therefore neither foresight nor hindsight can extinguish the possibility of strange feedback loops across time and the possibility of unanswerable questions. As in the spatial case, no feedback loops can exist in time between an oracle and itself. Generalizing, no feedback loops among several oracles in time can exist if we require avoidance of unanswerable questions.

From Question Pair #4 about Young Bob and Old Bob, we see that a feedback loop across time is not permissible. Young Bob can make inferences about Old Bob and Old Bob about Young Bob. But both cannot make an inference about each other simultaneously if we require eradication of the possibility of all unanswerable questions. In other words, feedback loops cannot exist across time. As before, feedback loops can be avoided by lexicographically ordering all inference devices at every point in time and, to avoid feedback, by never allowing a node to point to another node of lower number.

Prohibiting feedback loops across space and time is illustrated in Figure 9. There are nodes illustrated at two points in time: the *past* and the *future*. Each of the nodes is numbered. Some nodes exist in both points of time. Node ❷ in the past is node ❸ in the future. Some agents, such as ❺, die. Others, such as ❻, are born. Inference arrows, even across time, are prohibited from pointing to a node of lower (or equal) number. Node ❷ can make an inference about itself in the future as node ❸. But to avoid a feedback loop, node ❸ is not allowed to simultane-

Figure 8

ously make an inference about node ❷.[16] Likewise, node ❼ is allowed to make an inference about itself in the past when it was node ❽.

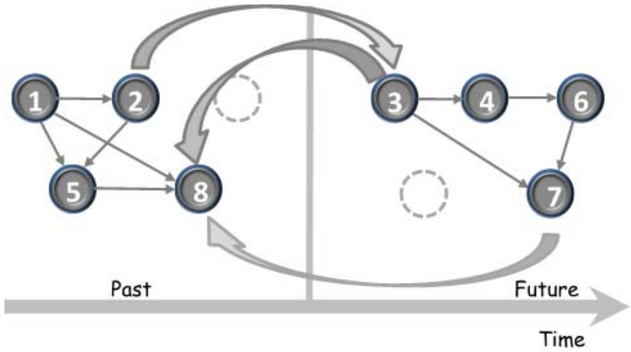


Figure 9

Omniscience across Time and Space

What about omniscience in the flow of time? In the past in Figure 9, node ❶ was universally omniscient for an instant of time. In the future, no node is universally omniscient over all other nodes.

How can there be universal omniscience when inference devices are spread out in both space and time? The key is that the omniscient oracle lies outside of both space and time. Both scripture and cosmology indicate that God lives outside of time and space. Consider the following description of creation from the perspective of the Big Bang.

> It's common to picture the universe before the Big Bang [a]s a large black void empty space. No. This is a flawed image. Before the Big Bang there was *nothing*. A large black void empty space is something. So space must be purged from our visualization. Our next impulse is then, mistakenly, to say, "There was nothing. Then, all of a sudden …" No. That doesn't work either. "All of a sudden" presupposes there was time and modern cosmology says that time in our universe was also created at the Big Bang. The concept of *nothing* must exclude conditions involving time and space. *Nothing* is conceptually difficult because the idea is so divorced from our experience and familiarity zones.[17]

If God created both space and time, he lies outside of space and time or he did. The first words in both Genesis and the Gospel of John are "In the beginning …" Other more explicit supporting verses include

- "the beginning of time'' in John 9:32, AMP; Titus 1:2, NIV; and 2 Timothy 1:9, NIV;
- "from the birth of time'' in Proverbs 8:23, BEB;
- "before time began" in 1 Corinthians 2:7, NIV; and
- "before time was" in Psalm 90:2, BEB.[18]

God's universal omniscient character, therefore, is allowed to exist outside of time and space, and we can fill in an eternal universally omniscient oracle in Figure 9 as shown in Figure 10. The omniscient oracle by necessity exists or has existed outside of time and space. Hugh Ross contends that God exists outside of time, and he explains God's view of time as akin to seeing both the beginning, middle, and end of a movie on a celluloid film reel unwound and laid on the floor.[19] William Lane Craig, on the other hand, argues that God existed outside of time and, after creation, chose to flow with time.[20] Since God's temporal omniscience prior to creation would still be intact after the transition was made, the interpretations of both Ross and Craig are consistent with our model.

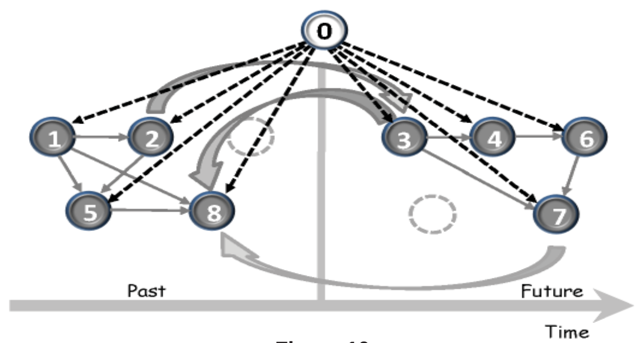


Figure 10

We return to our discussion of Figure 10. As was the case in space only, if the numbering and the labeling of the graph is such that no feedback loops are present, inclusion of the universally omniscient node ⓿ will introduce no feedback loops and the universe of inference devices can never ask any unanswerable questions.

The existence of the omniscient node outside of time and space resolves what initially appears as an unanswerable question not yet addressed. We have seen that an oracle cannot ask itself, "Will you respond 'no' to this question?" Does this strange loop still apply to the omniscient oracle and invalidate the principle of omniscience? No. The question contains an erroneous presupposition. The question assumes a future and therefore the flow of time. There can be no future if there is no time. Because this self-referential prophecy contains a faulty presupposition, it is a faulty question and is therefore disqualified from consideration. The omniscient oracle outside of time and space contains no strange loops and therefore remains consistent.

From Figure 10, we see that there can be, at most, only one universally omniscient oracle. There can be only one omniscient entity, and it will be the only source node in the universe (or multiverse). The characteristic of universal omniscience can therefore be assigned to only one God.

Conclusion

Self-refuting statements are powerful tools to demonstrate the invalidity of flawed propositions. Strange loops that result from such consideration do not exist. By avoiding strange loops in questions proposed by one agent about another, we have argued that there can exist, at most, a single Omniscient Being and that this being must exist by necessity outside of both time and space. This exercise neither proves the existence of God nor refutes atheism. It also does not exclude the possibility of multiple nonomniscient gods. It does, however, demonstrate logical consistency of biblical claims concerning monotheism and timeless omniscience.

Note also that the model does not imply that God is unknowable. In the graphs, arrows representing *some* knowledge of other agents can point in many directions, including to the omniscient being. Arrows representing all-knowing omniscience, however, are more restrictive and indicate that there can be, at most, one omniscient being.

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Notes

[1]Alfred North Whitehead and Bertrand Russell, *Principia Mathematica*, 3 vols. (Cambridge: Cambridge University Press, 1910, 1912, and 1913).

[2]John Cassidy, "The Most Influential Book Never Read," *New Yorker* 75, no. 13 (May 1999): 32.

[3]Kurt Gödel, "Über formal unentscheidbare Sätze der *Principia Mathematica* und verwandter Systeme, I" [On Formally Undecidable Propositions of *Principia Mathematica* and Related Systems, I] (1931) in Solomon Feferman, ed., *Kurt Gödel Collected Works*, vol. 1 (Oxford: Oxford University Press, 1986), 144–95.

[4]Roger Penrose, *The Emperor's New Mind: Concerning Computers, Minds, and The Laws of Physics* (Oxford: Oxford University Press, 1989).

[5]Douglas R. Hofstadter, *Gödel, Escher, Bach: An Eternal Golden Braid* (New York: Random House, 1979).

[6]Ibid.

[7]Roger N. Shepard, "Circularity in Judgements of Relative Pitch," *Journal of the Acoustical Society of America* 36, no. 12 (1964): 2346–53, doi:10.1121/1.1919362.

[8]J. C. Risset, "Pitch and Rhythm Paradoxes: Comments on 'Auditory Paradox Based on Fractal Waveform,'" *Journal of the Acoustical Society of America* 80, no. 3 (1986): 961–2. Examples of pitch and rhythm strange loops can be heard at http://en.wikipedia.org/wiki/Jean-Claude_Risset.

[9]Penrose, *The Emperor's New Mind*.

[10]G. J. Chaitin, *Conversations with a Mathematician* (New York: Springer-Verlag, 2002).

[11]G. J. Chaitin, *Thinking about Gödel and Turing: Essays on Complexity, 1970–2007* (Singapore: World Scientific Publishing, 2007).

[12]David H. Wolpert, "Physical Limits of Inference," *Physica D: Nonlinear Phenomena* 237, no. 9 (2008): 1257–81.

[13]Ibid.

[14]Whitehead and Russell, *Principia Mathematica,* used a similar hierarchical theory of types to avoid the strange loop arising from Russell's paradox. See, for example, Hofstadter, *Gödel, Escher, Bach*.

[15]Russell D. Reed and R. J. Marks II, *Neural Smithing: Supervised Learning in Feedforward Artificial Neural Networks* (Cambridge, MA: MIT Press, 1999).

[16]Using the word "simultaneously" to describe inferences at two different points in time, although a curious word choice, is clear in the context used.

[17]William A. Dembski and Robert Jackson Marks, "Bernoulli's Principle of Insufficient Reason and Conservation of Information in Computer Search,'' in *Proceedings of the 2009 IEEE International Conference on Systems, Man, and Cybernetics* (San Antonio, TX: Institute of Electrical and Electronics Engineers, 2009), 2647–52.

[18]We will leave the deeper meaning of these verses to study by Bible scholars. A literal interpretation of these passages, though, establishes scriptural and cosmological consistency concerning the creation of time.

[19]Hugh Norman Ross, *The Fingerprint of God: Recent Scientific Discoveries Reveal the Unmistakable Identity of the Creator* (Columbia, TN: Promise Publishing, 1991); and Hugh Ross, *The Creator and the Cosmos: How the Greatest Scientific Discoveries of the Century Reveal God* (Colorado Springs, CO: NavPress, 1993).

[20]William Lane Craig, *Time and Eternity: Exploring God's Relationship to Time* (Wheaton, IL: Crossway, 2001).